This Claim Listing replaces all prior versions of claim listings in the application. Please note that this claim listing is in a format indicating changes after entry of the amendments presented in the Amendment and Response dated 10 September 2007.

Claim Listing:

1.-68. (Canceled).

69. (Currently Amended) A high-throughput system for rapidly determining the proliferative status of primitive hematopoietic cells ~~assaying hematopoiesis and hematotoxicity in a cell~~ by luminescence output comprising:

a. a target cell population of mononuclear cells comprising primitive hematopoietic cells;

b. a medium comprising serum ~~mix~~ and methyl cellulose;

~~c. a methyl cellulose mix;~~

~~d.~~ c. a proliferation agent specific for a single subpopulation of primitive hematopoietic cells ~~within the target cell population of mononuclear cells~~, the proliferation agent comprising one or more growth factors, one or more cytokines, or ~~selected from the group consisting of a single growth factor, a mix of growth factors, a single cytokine, a mix of cytokines, and~~ combinations thereof;

~~e. a medium;~~

~~f.~~ d. a reagent capable of reacting with ATP and generating luminescence in the presence of ATP; and

~~g.~~ e. a plate;

wherein the target cell population, ~~the serum mix, the methyl-cellulose mix, the proliferation agent,~~ the medium, the proliferation agent, and the reagent capable of reacting with ~~generating luminescence in the presence of~~ ATP are combined in an order to determine the proliferative status ~~state~~ of the ~~single~~ subpopulation of primitive hematopoietic cells by detecting the level of luminescence ~~output thereof.~~ generated from the reagent that reacted with the ATP, and

wherein the level of luminescence detected indicates the amount of ATP in the subpopulation of primitive hematopoietic cells, and the amount of ATP in the subpopulation of primitive hematopoietic cells indicates the proliferative status of the subpopulation of primitive hematopoietic cells.

70. (Previously Presented) The system of Claim 69, wherein the proliferation agent is further selected from the group consisting of erythropoietin, granulocyte-macrophage colony stimulating factor, granulocyte colony stimulating factor, macrophage colony stimulating factor, thrombopoietin, stem cell factor, interleukin-1, interleukin-2, interleukin-3, interleukin-6, interleukin-7, interleukin-15, Flt3L, leukemia inhibitory factor, and combinations thereof.

71. (Currently amended) The system of Claim 70, further comprising instructions for determining the proliferative status ~~state or the hematotoxicity~~ of the ~~single~~ subpopulation of primitive hematopoietic cells by luminescence output.

72. (Currently amended) The system of Claim 71, wherein the target cell population of mononuclear cells further comprises a population of human or animal hematopoietic cells.

73. (Previously Presented) The system of Claim 71, further comprising an ATP standard solution.

74. (Currently Amended) The system of Claim 72, wherein the serum further ~~mix~~ comprises bovine serum albumin, an insulin, an iron-saturated transferrin, ~~a serum,~~ and Iscove's modified Dulbecco's medium (IMDM).

75. (Previously Presented) The system of Claim 74, wherein the insulin is recombinant insulin.

76. (Canceled).

77. (Currently amended) The system of Claim 69 [[76]] further comprising:

a. the medium having a concentration of fetal bovine serum between 0% to about 30% by volume;

b. the methyl cellulose having a concentration of between about 0.4% to about 0.7%, by weight;

c. an atmosphere having a concentration of oxygen between about 3.5% oxygen and about 7.5% oxygen by volume; and

d. instructions for determining the luminescence generated by the reagent capable of reacting with ATP and generating luminescence in the presence of ATP ~~, wherein the level of luminescence correlates to the amount of ATP in the target cell population, and the amount of ATP correlates to the proliferative status of the target cell population~~.

78. (Previously Presented) The system of Claim 77, wherein the concentration of fetal bovine serum in the medium is between 0% and about 10% by volume.

79. (Previously Presented) The system of Claim 77, wherein the concentration of methyl cellulose in the medium is about 0.7% by weight.

80. (Previously Presented) The system of Claim 77, wherein the concentration of oxygen in the atmosphere is about 5% by volume.

81. (Currently amended) The system of Claim 77, wherein the target cell population further comprises ~~includes~~ an enriched population of hematopoietic stem cells.

82. (Currently amended) The system of Claim 77, ~~further comprising~~ wherein the target cell population further comprises a population ~~a cell suspension~~ enriched in at least one hematopoietic progenitor cell lineage.

83. (Currently amended) The system of Claim 77, wherein the target cell population further comprises hematopoietic stem cells.

84. (Currently amended) The system of Claim 77, wherein the target cell population further comprises hematopoietic progenitor cells.

85. (Currently amended) The system of Claim 77, wherein the target cell population further comprises hematopoietic stem cells and hematopoietic progenitor cells.

86. (Currently amended) The system of Claim 77, wherein the target cell population further comprises primary hematopoietic cells.

87. (Previously Presented) The system of Claim 86, wherein the primary hematopoietic cells are isolated from an animal tissue selected from the group consisting of peripheral blood, bone marrow, umbilical cord blood, yolk sac, fetal liver, and spleen.

88. (Previously Presented) The system of Claim 87, wherein the animal tissue is obtained from a human.

89. (Previously Presented) The system of Claim 87, wherein the animal tissue is obtained from a mammal.

90. (Previously Presented) The system of Claim 89, wherein the mammal is selected from the group consisting of cow, sheep, pig, horse, goat, dog, cat, non-human primates, rodents, rabbit, and hare.

91. - 92. (Canceled).

93. (Previously Presented) The system of Claim 86, wherein the primary hematopoietic cells are isolated from peripheral blood.

94. (Previously Presented) The system of Claim 77, wherein the target cell population further comprises a differentially distinguishable subpopulation of primitive hematopoietic cells, wherein the differentially distinguishable subpopulation of primitive hematopoietic cells is defined by a cell surface marker thereon.

95. (Previously Presented) The system of Claim 94, further comprising:

a. a cell surface marker indicator capable of selectively binding to a cell surface marker on the differentially distinguishable subpopulation of primitive hematopoietic cells; and

b. instructions for selectively isolating the differentially distinguishable subpopulation of primitive hematopoietic cells binding the indicator.

96. (Previously Presented) The system of Claim 94, wherein the cell surface marker is selected from the group consisting of CD3, CD4, CD8, CD34, CD90 (Thy-1) antigen, CD117, CD38, CD56, CD61, CD41, glycophorin A, HLA-DR, and CD133.

97. (Previously Presented) The system of Claim 94, wherein the cell surface marker is CD34.

98. (Previously Presented) The system of Claim 95, wherein a magnetic bead separation system is used to selectively isolate the differentially distinguishable subpopulation of primitive hematopoietic cells.

99. (Previously Presented) The system of Claim 95, wherein a flow cytometry and cell sorting apparatus is used to selectively isolate the differentially distinguishable subpopulation of primitive hematopoietic cells.

100. (Currently amended) The system of Claim 77, wherein the single subpopulation of primitive hematopoietic cells comprises a stem cell lineage selected from the group consisting of colony-forming cell-blast (CFC-blast), high proliferative potential colony forming cell (HPP-CFC), and colony-forming unit-granulocyte, erythroid, macrophage, megakaryocyte (CFU-GEMM).

101. (Currently amended) The system of Claim 77, wherein the single subpopulation of primitive hematopoietic cells comprises a hematopoietic progenitor cell lineage selected from the group consisting of granulocyte-macrophage colony-forming cell (GM-CFC), megakaryocyte colony-forming cell (Mk-CFC), macrophage colony-forming cell (M-CFC), granulocyte colony forming cell (G-CFC), burst-forming unit erythroid (BFU-E), colony-forming unit-erythroid (CFU-E), colony-forming cell-basophil (CFC-Bas), colony-forming cell-eosinophil (CFC-Eo), B cell colony-forming cell (B-CFC), and T cell colony-forming cell (T-CFC).

102. (Previously Presented) The system of Claim 77, wherein the reagent capable of generating luminescence in the presence of ATP comprises luciferin and luciferase.

103. (Previously Presented) The system of Claim 69, wherein the proliferation agent is selected from the group consisting of erythropoietin, granulocyte-macrophage colony stimulating factor, granulocyte colony stimulating factor, macrophage colony stimulating factor, thrombopoietin, stem cell factor, interleukin-1, interleukin-2, interleukin-3, interleukin-6, interleukin-7, interleukin-15, Flt3L, leukemia inhibitory factor, and combinations thereof.

104. (Previously Presented) The system of Claim 77, wherein the proliferation agent is further selected from the group consisting of stem cell factor, interleukin-6, Flt3L, and combinations thereof.

105. (Previously Presented) The system of Claim 77, wherein the proliferation agent is further selected from the group consisting of macrophage colony stimulating factor, interleukin-1, interleukin-3, interleukin-6, stem cell factor, and combinations thereof.

106. (Previously Presented) The system of Claim 77, wherein the proliferation agent is further selected from the group consisting of erythropoietin, granulocyte-macrophage colony stimulating factor, granulocyte colony stimulating factor, stem cell factor, interleukin-3, interleukin-6, Flt3L, and combinations thereof.

107. (Previously Presented) The system of Claim 77, wherein the proliferation agent is further selected from the group consisting of (a) erythropoietin, (b) erythropoietin and interleukin-3, (c) erythropoietin and stem cell factor, and (d) erythropoietin, stem cell factor, and interleukin-3.

108. (Previously Presented) The system of Claim 77, wherein the proliferation agent is further selected from the group consisting of (a) granulocyte-macrophage colony stimulating factor, (b) granulocyte-macrophage colony stimulating factor and interleukin-3, and (c) granulocyte-macrophage colony stimulating factor, interleukin-3, and stem cell factor.

109. (Previously Presented) The system of Claim 77, wherein the proliferation agent is further selected from the group consisting of (a) thrombopoietin, and (b) thrombopoietin, interleukin-3, and interleukin-6.

110. (Previously Presented) The system of Claim 77, wherein the proliferation agent is further selected from the group consisting of (a) interleukin-2, and (b) interleukin-7, Flt3L, and interleukin-15.

111. (Previously Presented) The system of Claim 77, wherein the proliferation agent is further selected from the group consisting of (a) interleukin-7, and (b) interleukin-7 and Flt3L.

112. (Previously Presented) The system of Claim 77, wherein the proliferation agent is erythropoietin.

113. (Previously Presented) The system of Claim 77, wherein the proliferation agent is further selected from the group consisting of granulocyte colony stimulating factor and granulocyte-macrophage colony stimulating factor.

114. (Previously Presented) The system of Claim 77, wherein the proliferation agent is further selected from the group consisting of (a) interleukin-3, and (b) interleukin-3 and stem cell factor.

115. (Previously Presented) The system of Claim 77, wherein the proliferation agent is further selected from the group consisting of granulocyte-macrophage colony stimulating factor, interleukin-3, interleukin-5, and combinations thereof.

116. (Previously Presented) The system of Claim 77, wherein the proliferation agent is further selected from the group consisting of (a) macrophage colony stimulating factor, (b) macrophage colony stimulating factor and granulocyte-macrophage colony stimulating factor, and (c) granulocyte-macrophage colony stimulating factor.

117. (Currently amended) The system of Claim 77 [[76]], further comprising:

a. a test compound capable of contacting the target cell population; and

b. instructions to determine the ability of the test compound to modulate the proliferation of the target cell population.

118. (Previously Presented) The system of Claim 117, further comprising instructions to determine the ability of the test compound to modulate the differentiation of the target cell population.

119. (Previously Presented) The system of Claim 77, wherein the system further comprises:

a. the target cell population comprising a plurality of target cell subpopulations;

b. at least one test compound capable of contacting the plurality of target cell subpopulations;

c. instructions to determine the ability of the at least one test compound to alter the proliferation of the target cell population by comparing the proliferative status of the plurality of target cell subpopulations with the proliferative status of a target population of cells not in contact with the at least one test compound; and

d. instructions to identify the at least one test compound modulating the proliferative status of the target cell population.

120. - 135. (Canceled).